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OFFICE OF THE PRESIDENT

December 5, 1991

Dr. Michael Zuker
Institute for Biological Sciences
National Research Council of Canada
Building M-54
Ottawa, Ontario
Canada, K 1 A OR6

Dear Dr. Zuker,

In my lab at the NIH, our research focuses on the transcription and translation of human LINE-1 elements, a family of nonLTR retrotransposons. Haig Kazazian and his group at Johns Hopkins have demonstrated that this family is actively transposed in contemporary genomes and have identified a particular LINE-1 on chromosome 22 that has the attributes expected of an active element. Most of the 100,000 LINE-1 copies in the genome are probably not active, being either truncated, rearranged, or having mutations that close one or the other or both reading frames. Because Kazazian's group and mine have good collegial relations, we collaborate a good bit.

We have been using the cloned version of the putatively "active" LINE-1 from chromosome 22 isolated in Kazazian's lab as well as other cDNA and genomic clones in our work on expression. All of these have a very long 5' UTR. The transcriptional regulatory signals all appear to be within the 5'UTR although transcription starts at residue 1 of the element. More to the point, translation of ORF1, which starts about 900 residues downstream of residue 1, is quite efficient. Another point of interest is that the reverse transcriptase coding region of LINE-1 is more like the polio polymerase than other polynucleotide polymerases (except those associated with LINE-1-like elements in other species).

We know from our amateurish efforts that the 5'UTR can be folded in a variety of ways. It has occurred to us that in this region there may be structural motifs similar to those you have

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proposed to be significant in enteroviruses and rhinoviruses. Kazazian and I decided to write and ask if you would be willing to put the LINE-1 5'UTR through your suboptimal folding algorithm to see if anything of interest turns up. We would be pleased to send the sequence on a disk, if you let us know the preferred form.

I've enclosed a couple of reprints from our work. You may not be interested in the details, but the introductions may supply some relevant facts I've left out of this letter.

We look forward to hearing from you.

Sincerely,

Maxine F. Singer

Enclosures

cc: Dr. Haig Kazazian